

UNIT-2

CHILDREN & WOMEN IN SPORTS



CONTENT:

- Exercise guidelines of WHO for different age groups.
- Common postural deformities-knock knees, flat foot, round shoulders, Lordosis, Kyphosis, Scoliosis, and bow legs and their respective corrective measures.
- Women's participation in Sports – Physical, Psychological, and social benefits.
- Special consideration (menarche and menstrual dysfunction).
- Female athlete triad (Osteoporosis, Amenorrhea, eating disorders)

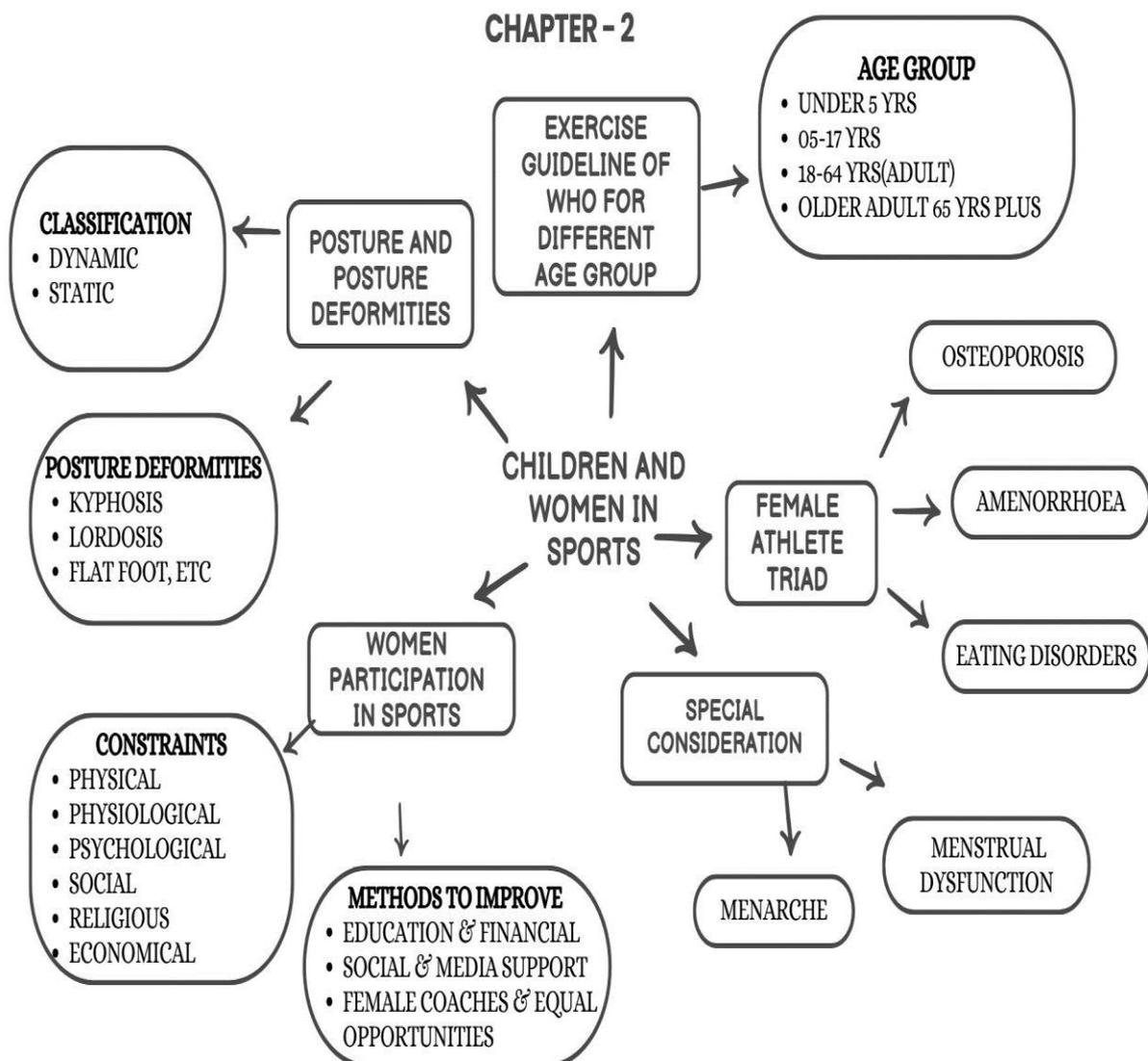
LEARNING OBJECTIVES

- To make students understand the exercise guidelines of WHO for different age groups
- To make students aware of the common postural deformities
- To make students aware of women's sports participation in India and about the special conditions of women
- To make students understand menarche and menstrual dysfunction among women athletes
- To make them understand about female athlete triad

LEARNING OUTCOMES

- Differentiate exercise guidelines for different stages of growth and development.
- Classify common postural deformities and identify corrective measures.
- Recognize the role and importance of women's sports participation in India.
- Identify special considerations related to menarche and menstrual dysfunction.
- Express the female athlete triad according to eating disorders.

MIND MAP (MARKS WEIGHTAGE-07 MARKS)



2.1.1 EXERCISE GUIDELINES OF WHO FOR DIFFERENT AGE GROUPS

- The World Health Organisation (WHO) lists physical inactivity as the fourth leading cause of global deaths (6%).
- Regular physical activity supports physical, mental, and social well-being.
- Participation in sports boosts self-confidence and emotional control.
- It helps reduce stress, anxiety, and depression.
- Physical activity also supports healthy weight maintenance.
- It promotes better social interaction and academic performance.
- All age groups benefit from physical activity: infants, children, adolescents, and adults.
- Children should avoid long hours of inactivity, like watching TV or playing video games.
- WHO's Global Recommendations provide guidelines on the right amount and type of physical activity to prevent lifestyle diseases.

Infants (0–1 year)

- Should be active several times a day. Let them crawl, roll, reach, and play on the floor (tummy time).
- No screen time. Encourage storytelling when resting.
- Sleep: 14–17 hours (0–3 months), 12–16 hours (4–11 months).

Toddlers (1–2 years)

- At least 3 hours of physical activity spread across the day.
- No more than 1 hour of screen time for 2-year-olds.
- Sleep: 11–14 hours with naps and regular sleep time.

Preschoolers/ pre-primary children (3–4 years)

- 3 hours of varied activity; at least 1 hour should be energetic (like running or jumping).
- Limit screen time to less than 1 hour.
- Sleep: 10–13 hours with naps.

Children & Teens (5–17 years)

- At least 1 hour of moderate to vigorous activity daily.

- Activities should include running, jumping, throwing, and team sports.
- It helps with fitness, stronger bones, and better mental health.

Adults (18–64 years)

- 150–300 minutes of moderate activity or 75–150 minutes of intense activity per week.
- Include muscle-strengthening activities twice a week.
- Helps in managing weight and reducing disease risk.

Seniors (65+ years)

- Same as adults, but add balance exercises (e.g., standing on one leg).
- Helps prevent falls, keeps bones strong, and maintains health.
- Consult a doctor if there are health issues.

INFANTS (0–1 YEAR)

Age	Sedentary Behaviour	Physical Activity	Sleep
Less than 1 year	Not to be restrained for more than 1 hour at a time. Encourage reading and storytelling when sedentary. Screen time is not recommended.	Physically active several times a day through interactive floor-based play including 30 minutes of tummy time.	14–17 hours (0–3 months of age), 12–16 hours (4–11 months of age) of good quality sleep, including naps.
1–2 years	Not to be restrained for more than 1 hour at a time or sit for extended periods of time. No screen time for 1-year-olds. For 2 years, sedentary screen time should be no more than 1 hour. Encourage reading and storytelling.	At least 180 minutes in a variety of types of physical activities including moderate- to vigorous-intensity physical activity, spread throughout the day.	11–14 hours of good quality sleep, including naps, with regular sleep and wake-up times.

3–4 years	Not to be restrained for more than 1 hour at a time or sit for extended periods of time. Sedentary screen time should be no more than 1 hour; less is better. Encourage reading and storytelling.	At least 180 minutes in different types of physical activities at any intensity, of which at least 60 minutes is moderate- to vigorous-intensity physical activity, spread throughout the day.	10–13 hours of good quality sleep, which may include a nap, with regular sleep and wake-up times.
------------------	---	--	---

2.1.2 CHILDREN AND YOUTH OF 05 TO 17 YEARS

Parameter	Details
Intensity	Moderate to Vigorous.
Volume/Duration	At least one hour in a day; more than 60 minutes will provide additional health benefits.
Frequency	One session of 1 hour or two sessions of 30 minutes each.
Types of Activities	Aerobic, basic exercises for strengthening of muscles, Fundamental activities (Jumping, running, throwing, turning, twisting, etc.)
Benefits	Regular exercise helps to develop the musculo-skeletal system (bones, muscles, and joints), cardiovascular system (heart and lungs), neuromuscular system (coordination, movement control, motor learning), and maintain healthy body composition. Physical activities also help to develop psychological (control over emotions, anxiety, depression, and stress) and sociological aspects (interaction, integration, leadership), result in healthy behaviour (avoidance of tobacco, alcohol, drugs), and promote academic performance.
Activities	Play, games, sports, recreation, physical education, unplanned to planned exercises with or within family, school, and community.

2.1.3 ADULTS OF 18 TO 64 YEARS

Parameter	Details
Intensity	Moderate to Vigorous.
Types of Activities	Muscular strengthening (strength) and Aerobic physical activities
Aerobic Activities	150 to 300 minutes per week with moderate intensity or 75 to 150 minutes per week with vigorous intensity; one aerobic activity bout should be at least 10 minutes
Muscle Strengthening Activities	Activities involving major muscles two or more days in a week
Benefits	Regular physical activity helps to lower the risk of all causes of mortality (e.g., heart diseases, blood pressure, stroke, Type 2 diabetes, metabolic syndrome, colon and breast cancers, and depression), hip or vertebral fractures. It helps develop higher cardiorespiratory and muscular fitness, maintain a healthy weight and body composition, improve bone health, and reduce the risk of Non-Communicable Diseases and depression.
Activities	Physical activities (walking, jogging, swimming, weight training, dancing, etc.), occupational work, household work (car wash, gardening, etc.), games, sports,

	recreation, transportation (walking, cycling), and planned exercises with or within family and community.
--	---

2.1.4 OLDER ADULTS OF 65 YEARS AND ABOVE

Parameter	Details
Intensity	Moderate to Vigorous.
Types of Activities	Muscular strengthening (strength) and Aerobic physical activities and Balance-enhancing exercises.
Aerobic Activities	150 to 300 minutes per week with moderate intensity or 75 to 150 minutes per week with vigorous intensity; one aerobic activity bout should be at least 10 minutes.
Muscle Strengthening Activities	Activities involving major muscles involved activity, two or more days in a week.
Balance-enhancing Activities	Older adults, with poor mobility, should perform physical activity to enhance balance and prevent falls on 3 or more days per week.
Benefits	Regular physical activity helps to lower the risk of all causes of mortality (e.g., heart disease, blood pressure, stroke, Type 2 diabetes, metabolic syndrome, colon and breast cancers, and depression), hip or vertebral fractures. It improves cardiorespiratory and muscular fitness, helps maintain a healthy weight and body composition, and lowers the risk of Non-Communicable Diseases, depression, and cognitive decline.
Activities	Physical activities (walking, jogging, swimming, weight training, dancing, etc.), occupational work, household work (car wash, gardening, etc.), games, sports, recreation, transportation (walking, cycling), and planned exercises with or within family and community.

2. 2 POSTURE:

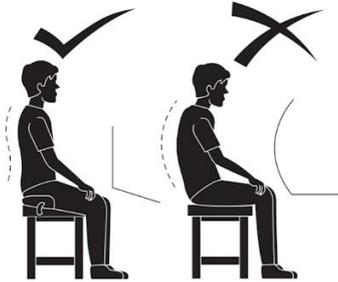
Posture is defined as the attitude assumed by the body either with support during the course of muscular activity, or as a result of the coordinated action performed by a group of muscles working to maintain stability.

Posture is classified into two categories.

- **Dynamic posture** refers to body alignment while moving (e.g., walking or bending), requiring muscles to adapt to motion.



- **Static posture** is body alignment while still (e.g., sitting or standing), maintained by muscle coordination to resist gravity.



Maintaining good posture ensures proper body alignment, reducing stress on joints and muscles, preventing fatigue, and promoting better productivity and well-being. Postural deformities can result from heredity, illness, injury, poor habits, lifestyle factors, or lack of exercise.

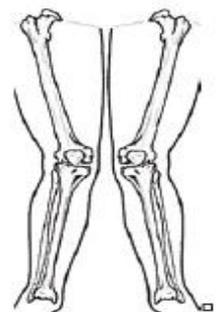
2.2.1 COMMON POSTURAL PROBLEMS IN CHILDREN

- Common postural deformities include knock knees, flat feet, bow legs, round shoulders, scoliosis, lordosis, and kyphosis. These can affect body alignment and movement. Corrective exercises, posture training, and medical support can help manage them. Such measures should always be done under the supervision of a doctor or physiotherapist.

2.1.2 Knock Knees

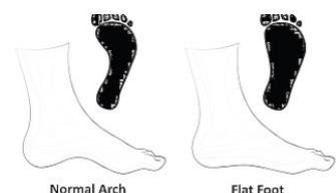
Knocked knees, medically known as **genu valgum**, is a condition where a person's knees touch or angle inward while the ankles remain apart when standing straight. This causes the legs to form an "X" shape and can affect posture, balance, and walking pattern.

- Causes: Weak bones, obesity, or lack of vitamins.
- Fix: Leg exercises, horse riding, yoga, and reducing weight.



2.2.3 Flat Foot

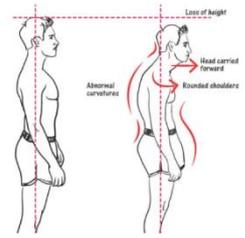
- Feet have no arch; full sole touches the ground.
- Causes: Poor footwear, weak muscles, or obesity.



- Fix: Toe exercises, walking on toes, yoga, and massages.

2.2.4 Round Shoulders

- Shoulders bend forward.
 - Causes: Poor posture, long computer use, weak muscles.
 - Fix: Stretching, yoga (Chakrasana), and back exercises



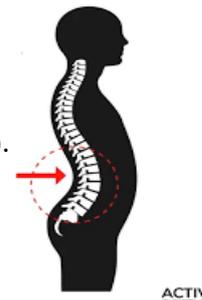
2.2.5 Kyphosis (Hunch Back)

- The upper back curves outward too much.
 - Causes: Poor posture, weak bones, or heavy school bags.
 - Fix: Back-strengthening exercises and yoga (Bhujangasana).



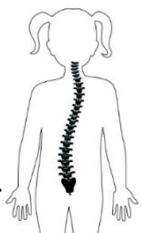
2.2.6 Lordosis (Sway Back)

- **Lordosis** is a condition in which there is an **excessive inward curvature of the spine**, usually in the **lower back (lumbar region)**.
- Causes: Obesity, poor posture, or weak muscles.
 - Fix: Pelvic exercises, wall pushbacks, and yoga.



2.2.7 Scoliosis

- Spine bends sideways in a 'C' or 'S' shape.
 - Causes: Poor posture or unknown reasons.
 - Fix: Side-stretching, hanging from bars, and yoga (Trikonasana).



2.2.8 Bow Legs

- Legs curve outward at the knees.
 - Common in toddlers and may correct on its own.
 - Fix: Braces, proper shoes, and a healthy diet.



2.3 Women in Sports

In the past, women had fewer chances to play sports. But today, more women are joining and doing well in sports. Famous Indian women athletes include PV Sindhu, Mary Kom, and Hima Das. Playing sports helps women stay fit, gain confidence, and break social barriers.

2.3.1 Women's Participation in Sports

I. Physical Benefits

- Reduces Lifestyle Diseases: Lowers risk of diabetes, obesity, and high blood pressure.
- Increases Bone Density: Prevents osteoporosis, especially common in women.
- Tones Muscles: Enhances strength and muscle tone.
- Improves Cardiovascular Health: Boosts oxygen intake and stamina.
- Controls Obesity: Helps maintain a healthy body weight.

II. Psychological Benefits

- Stress Management: Exercise releases hormones that reduce stress.
- Emotional Control: Builds resilience through challenging sports situations.
- Confidence: Small wins build confidence and self-belief.
- Self-Esteem: Enhances self-worth and positive self-image.
- Leadership Skills: Encourages decision-making and responsibility.

III. Social Benefits

- Coordination: Promotes teamwork and collective effort.
- Communication: Improves expression and interaction.
- Relationships: Fosters respectful inter-personal relationships.
- Cooperation: Teaches working in harmony with others.

Ways of Encouraging Women in Sports

- Promote sports from school to university level.
- Organize awareness programs and ensure family support.
- Increase media coverage and sponsorship.
- Develop women-specific sports facilities and gear.
- Appoint women coaches and offer competition opportunities.
- Eliminate cultural barriers and offer state incentives.

Achievements of Indian Women in Sports

- Karnam Malleswari: First Olympic medal (2000).
- Mary Kom, Saina Nehwal, Sakshi Malik, P.V. Sindhu: Olympic and world-level medalists.
- P.T. Usha, Anju Bobby George: Athletics icons.
- Mirabai Chanu, Lovlina Borgohain: Medalists in weightlifting and boxing.
- Saina Nehwal: Former world no. 1 in badminton.
- Indian women's cricket, wrestling, boxing, and badminton teams are achieving international success.

Global and National Support

- IOC: 49% participation of women in the next Olympic Games; supports seminars for women in sports roles.
- Indian Constitution: Ensures gender equality and prohibits gender bias.
- Sports as Empowerment: A powerful tool for gender equity and societal change.

Challenges/Constraints Faced by Women in Sports

- **Physical:** Body structure, less muscle strength, or posture problems.
- **Physiological:** Hormone issues, lower hemoglobin, menstrual problems.
- **Psychological:** Low confidence, fear, or stress.
- **Social:** Lack of family support, strict culture, or religion.
- **Economic:** Less money, fewer facilities, and no sponsors.

But many women overcome these barriers with support, training, and a strong will.

2.4 SPECIAL CONSIDERATION (MENARCHE AND MENSTRUAL DYSFUNCTION)

2.4.1 Menarche

Menarche is a girl's first period, usually between the ages of 8 to 15. Menstrual problems can include heavy bleeding, pain, irregular cycles, or no periods.

Common issues: Premenstrual Syndrome (PMS), Amenorrhea (no period), and Dysmenorrhea (painful period).

Causes: Stress, poor diet, intense exercise, or sudden weight change.

Fix: Proper nutrition, regular exercise, and medical help if needed.

2.4.2 Menstrual Dysfunction

There are several types of menstrual disorders:

1. **Pre-menstrual Syndrome (PMS):** Causes symptoms like depression, anxiety, headache, and fatigue before periods. It can be managed with exercise, a balanced diet, and proper rest.
2. **Amenorrhea:** Absence of menstruation.
 - **Primary:** Periods never start at puberty.

- Secondary: Periods stop for 3+ months.
3. **Dysmenorrhea:** Painful periods with cramps, back pain, nausea, and fatigue.
 4. **Menorrhagia:** Heavy or prolonged menstrual bleeding.
 5. **Polymenorrhea:** Frequent periods occurring less than 21 days apart.
 6. **Oligomenorrhea:** Infrequent periods occurring more than 35 days apart.
 7. **Metrorrhagia:** Irregular or abnormal bleeding between periods.
 8. **Postmenopausal Bleeding:** Bleeding after a year of menopause.

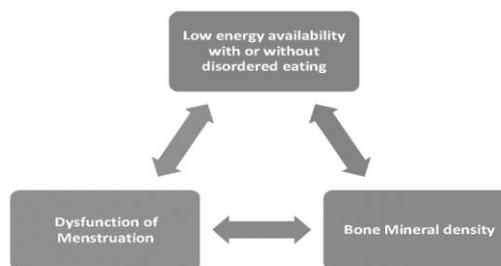
Low levels of oestrogen and progesterone due to intense exercise or being underweight, can disrupt normal menstrual cycles.

2.5 FEMALE ATHLETE TRIAD

The Female Athlete Triad is a serious health condition that affects some girls and women involved in intense sports or physical activities, especially when they do not eat enough to support their energy needs.

- Participation in sports and physical activities offers numerous benefits, especially for girls, including improved physical health, mental well-being, leadership, and teamwork skills. It helps regulate weight, reduces the risk of conditions like diabetes and high blood pressure, and supports emotional balance.
- However, when athletic training and competition cross a certain limit, especially in sports that emphasize leanness or weight categories, like gymnastics, distance running, judo, or wrestling, it can lead to serious health concerns.
- The pressure to maintain low body weight and high performance may push female athletes toward unhealthy behaviours such as restrictive eating and overtraining.
- This increases the risk of developing the **Female Athlete Triad**, a serious condition involving:
 - (A) Disordered eating
 - (B) Amenorrhoea (absence of menstruation)
 - (C) Osteoporosis (low bone density)
- The triad can have long-term consequences on reproductive and bone health, making awareness, early detection, and proper guidance essential for female athletes.

- ❖ The terminology for the Female Athlete Triad has been updated to better reflect the issues involved:
 - (A) Low energy availability (with or without an eating disorder)
 - (B) Menstrual dysfunction
 - (C) Low bone density
- ❖ These components are closely linked and can often be corrected by restoring proper energy balance. Ensuring that the body receives enough calories to support both physical activity and basic functions helps maintain menstrual health and bone strength. Addressing these factors early is key to preventing long-term health issues in female athletes.



Female Athlete Triad results from an imbalance between energy intake and expenditure, leading to three interrelated conditions:

1. **Low Energy Availability (with or without Disordered Eating):**
Athletes may develop eating behaviour disorders, from calorie restriction to clinical conditions like anorexia nervosa and bulimia nervosa. These are more common in sports that emphasize leanness. Symptoms include menstrual dysfunction, fatigue, weight loss, digestive issues, and mental health challenges. Coaches, parents, and staff must recognize signs early to prevent long-term or fatal effects.
2. **Menstrual Dysfunction:**
Irregular or missed periods are common in female athletes and often ignored. If unmanaged, they can impair bone health and athletic performance. Early education and management are essential to avoid long-term complications. Over 15% of Olympic female athletes may experience amenorrhea, which negatively impacts skeletal health.
3. **Low Bone Mineral Density (BMD):**
Caused by hormonal imbalance and poor nutrition, low BMD increases the risk of fractures and early osteoporosis. Bone mass peaks in the 20s–30s and is influenced by genetics, nutrition, and physical activity. Monitoring training intensity and considering genetic factors can help reduce risk.

Treatment & Management:

The key to recovery is restoring energy balance, which includes proper nutrition, weight gain, and menstrual regularity. Cognitive behavioural therapy and family-based support

are effective for treating disordered eating. Sports nutritionists play a crucial role in planning balanced diets and supplements to restore bone health and overall well-being.

HOW TO PREVENT AND TREAT

- ✓ Eat a balanced diet rich in calcium, vitamin D, and protein.
- ✓ Avoid extreme dieting or overtraining.
- ✓ Seek help from a doctor if periods stop or bones ache.
- ✓ Parents and coaches must provide support and watch for signs.

1 MARK QUESTIONS MCQ (Solved)

1. Scoliosis is a postural deformity related to _____
A. Muscles B. Shoulder C. Legs D. Spine
Answer: D
2. Which domain involves emotional growth?
A. Physical B. Affective C. Cognitive D. Psychomotor
Answer: B
3. Sakshi Malik won a medal in
A. Badminton B. Chess C. Wrestling D. Weightlifting
Answer: C
4. How much physical activity is recommended daily for a 10-year-old child?
A. 20 minutes B. 30 minutes C. 60 minutes D. 90 minutes
Answer: C
5. Which is the type of exercise recommended for adults of 18–64 years?
A. Only yoga B. Light walking
C. 150–300 mins of moderate activity D. No need for activity
Answer: C
6. The transition period between childhood to adulthood is called
A. Senescence B. Adolescence C. Early childhood D. Infant hood
Answer: B
7. What is one common cause of knock knees?
A. Not enough calcium B. Being overweight
C. Sitting for a long time D. None of these
Answer: B. Being overweight
8. Which exercise helps correct flat foot?
A. Swimming B. Walking on toes C. Heel raise D. Sit-ups

Answer: C

9. Who is the Indian woman who won a gold medal in World Badminton Championship?

- A. Mary Kom B. Saina Nehwal C. P.V. Sindhu D. Sania Mirza

Answer: B

10. What is one big reason that stops many women from playing sports?

- A. Being too tall B. Low red blood cells
C. Having high stamina D. Eating healthy food

Answer: A. Being too

11. What is menarche?

- A. First period B. Last period C. Monthly pain D. Exercise routine

Answer: A

12. Amenorrhea means:

- A. Heavy bleeding B. No periods C. Shorter cycle D. Painful periods

Answer: C

13. Which is NOT a part of the Female Athlete Triad?

- A. Low energy B. Eating disorder C. Strong bones D. Amenorrhea

Answer: C

14. Osteoporosis is related to:

- A. High blood pressure B. Decay in bones density C. Weight gain D. Heart issues

Answer: B

15. The Female Athlete Triad is a syndrome characterized by

- A. Osteoporosis B. Amenorrhea C. Eating Disorder D. All of the above

Answer: D

MCQ (Unsolved)

1. Ball handling is an activity that starts in a child in the developmental stage called

- A. Infancy B. Early childhood
C. Middle childhood D. Late childhood

2.is a postural deformity in which both knees touch or overlap each other in the normal standing position.

- A. Kyphosis B. Lordosis C. Flat foot D. Knock knees

3. In which Olympics did women participate for the first time?
A. 1896 B. 1900 C. 1904 D. 1908
4. Which one of the following exercises will be most appropriate for a 11-year-old child?
A. Twisting B. Cycling C. Pulling D. Playing with high-intensity outdoor games
5. P V Sindu was the first Indian to win world championship. She won ----- medal.
A. 2013 Bronze B. 2016 Silver C. 2014 Bronze D. 2019 Gold

2 MARKS QUESTIONS -VERY SHORT QUESTIONS

1. What is meant by the Female Athlete Triad?

Ans: The Female Athlete Triad is a medical condition seen in physically active females involving three interrelated components: low energy availability (with or without disorderly eating), menstrual dysfunction (amenorrhea), and low bone mineral density (osteoporosis).

2. What is amenorrhea and how does it affect female athletes?

Ans: Amenorrhea is the absence of menstruation. In female athletes, it can result from low energy availability and may lead to hormonal imbalance and reduced bone density.

3. Mention any two benefits of regular physical activity in children.

Ans: Regular physical activity helps in building strong bones and muscles, and improves coordination and overall fitness.

4. What are knock knees? Name one corrective measure.

Ans: Knock knees (Genu valgum) is a condition where the knees touch but ankles stay apart while standing. Corrective exercise like side-leg raises or supervised physical therapy can help.

5. Define static posture with one example.

Ans: Static posture refers to the body's position while being still, such as sitting or standing. For example, standing upright with aligned spine and shoulders.

6. Mention two causes of postural deformities.

Ans: Poor sitting habits and lack of physical activity are two common causes of postural deformities.

7. How does physical activity help in preventing lifestyle diseases?

Ans: It regulates body weight, improves metabolism, and lowers the risk of diseases like diabetes, obesity, and hypertension.

8. What are eating disorders? Give an example.

Ans: Eating disorders include unhealthy eating behaviours aimed at weight control. An example is skipping meals or extreme calorie restriction.

9. Name two psychological benefits of participation in sports.

Ans: Sports boost self-esteem and help in managing stress and anxiety.

10. Name any two types of constraints faced by women in sports.

Ans: 1. Physical

2. Physiological

UNSOLVED VERY SHORT ANSWER QUESTIONS (2 MARKS EACH)

1. What is low bone mineral density, and how does it affect the body?
2. Explain the term dynamic posture with an example.
3. List any two causes of amenorrhea in female athletes.
4. Mention two postural deformities and the body parts they affect.
5. Write two ways to manage or prevent the Female Athlete Triad

SHORT ANSWER TYPE QUESTIONS (3 Marks)

1. Explain the three components of the Female Athlete Triad.

Ans:

The Female Athlete Triad is a serious health condition commonly found in physically active females.

A) Low Energy Availability: Occurs when energy intake is insufficient to meet the demands of physical activity and basic bodily functions, often due to excessive training or disordered eating.

B) Menstrual Dysfunction: Refers to irregular or absent menstrual cycles (amenorrhea), caused by hormonal imbalances resulting from low energy.

C) Low Bone Mineral Density: Reduced bone strength due to hormonal changes, especially low oestrogen levels, which increases the risk of fractures and long-term bone issues like osteoporosis.

2. Mention any three benefits of regular participation in physical activities for children.

Ans:

A) Physical Fitness: Regular physical activity helps in building strong muscles and bones, enhancing stamina, and improving cardiovascular health.

B) Mental and Emotional Well-being: It reduces stress, anxiety, and depression while boosting mood and self-esteem.

C) Social Development: Participating in group sports promotes teamwork, leadership skills, discipline, and cooperation among peers.

3. Describe any three common postural deformities.

Ans:

A) Kyphosis: This is an excessive outward curve of the upper spine, leading to a hunched back. It can be caused by poor posture, weak muscles, or spinal issues.

B) Lordosis: It is the exaggerated inward curvature of the lower back, often resulting from weak abdominal muscles or obesity.

C) Flat Foot: In this condition, the arches of the feet collapse, causing the entire sole to touch the ground. It can lead to pain and poor balance.

4. How does poor posture affect the body? Give three effects.

Ans:

A) Muscular and Joint Strain: Poor posture puts undue pressure on muscles and joints,

leading to fatigue and discomfort.

B) **Reduced Physical Efficiency:** It hampers movement patterns, reducing an individual's ability to perform physical tasks efficiently.

C) **Chronic Pain and Deformities:** Over time, incorrect posture may result in spinal deformities, back pain, neck stiffness, and joint misalignment.

5. Explain any three causes of menstrual dysfunction in female athletes.

Ans:

A) **Low Energy Intake:** Female athletes who do not consume enough calories to match their physical activity often experience hormonal disruption.

B) **Excessive Training Load:** Intense physical training without adequate rest can lead to suppressed reproductive function and delayed or missed periods.

C) **Psychological Stress and Pressure:** Competitive stress, body image concerns, and performance anxiety can all interfere with the menstrual cycle.

6. What are three ways to prevent or manage the Female Athlete Triad?

Ans:

A) **Balanced Nutrition:** Ensuring the athlete consumes enough calories to meet both energy demands and bodily functions is key to preventing the triad.

B) **Medical and Psychological Support:** Early diagnosis, counselling, and proper treatment can help restore menstrual health and bone density.

C) **Awareness and Education:** Educating athletes, coaches, and parents about the risks of overtraining and disordered eating encourages early prevention and support.

3 Unsolved Short Answer Questions (3 Marks Each)

1. What are the effects of physical inactivity on children's physical and mental health?

2. Describe three corrective measures for any one postural deformities.

3. Explain the term 'low energy availability' and how it impacts athletic performance.

4 MARKS - CASE-BASED QUESTIONS

Case Study 1

Anita, a 17-year-old long-distance runner, has been training intensively for national competitions. Despite her dedication, she hasn't had her menstrual cycle for the last four months. Her coach is concerned, as Anita also reports fatigue, low energy, and frequent leg cramps. Upon consulting a sports physician, she is diagnosed with amenorrhea, a component of the Female Athlete Triad.

1. What are the three components of the Female Athlete Triad?

- A) Low energy, high metabolism, low BMI
- B) **Amenorrhea, osteoporosis, disordered eating**
- C) Menstrual cramps, low BMD, and obesity
- D) None of the above

2. What is the likely cause of Anita's amenorrhea?

- A) High protein intake
- B) Poor water consumption
- C) **Energy imbalance due to overtraining and low-calorie intake**
- D) Excess sleep

3. Which of the following is a long-term risk of ignoring menstrual dysfunction?

- A) Stronger muscles
- B) Improved vision
- C) **Weak bone health and stress fractures**
- D) Better flexibility

Case Study 2

Ravi is a 10-year-old boy who spends most of his time watching TV and playing video games. His parents are worried about his increasing weight and poor posture. His school recently started a physical education program encouraging students to engage in outdoor activities like yoga, football, and dance.

Questions (MCQ):

1. Which of the following is a physical benefit of regular exercise in children?

- A) Weaker bones
- B) Poor concentration
- C) **Healthy weight and stronger muscles**
- D) Reduced height

2. Which of the following affects motor development in children?

- A) Climate
- B) **Nutrition and physical activity**
- C) Internet usage
- D) Language

3. What is one way to help Ravi improve his posture?

- A) Watching more TV
- B) Sleeping late
- C) **Doing physical activities regularly**
- D) Avoiding sunlight

Case Study 3

Priya, a 13-year-old girl, often complains of back pain and is observed walking with slouched shoulders. Her physical education teacher suspects she may have developed a postural deformity due to poor sitting habits and lack of physical activity. A physiotherapist confirms that she has *round shoulders*.

1. Which of the following is NOT a postural deformity?

- A) Flat feet
- B) Knock knees
- C) **Strong posture**
- D) Scoliosis

2. One cause of postural deformities is:

- A) Eating fruits

- B) **Poor sitting habits**
- C) Good sleep
- D) Playing outdoor games

3. Which corrective measure is suitable for Priya?

- A) Carrying heavy bags
- B) Ignoring posture
- C) **Doing strengthening and stretching exercises**
- D) Sitting for long hours

Case Study 4

Seema is a talented boxer preparing for a state-level championship. While she performs well, she feels immense pressure to stay within a specific weight category. As a result, she has started skipping meals and overexercising. Her performance is declining, and she experiences mood swings and irregular periods.

1. Seema's symptoms suggest she may be suffering from:

- A) Anaemia
- B) Female Athlete Triad
- C) Thyroid
- D) Hypertension

Answer: B. Female Athlete Triad

2. Main reason behind Seema's health issues is:

- A) Lack of training
- B) Energy imbalance from restrictive eating
- C) Too much rest
- D) High protein diet

Answer: B. Energy imbalance from restrictive eating

3. Best action Seema's coach should take is:

- A) Ignore the signs
- B) Encourage more fasting
- C) Refer her to a sports nutritionist or psychologist
- D) Increase training hours

Answer: C. Refer her to a sports nutritionist or psychologist

4. Most likely long-term risk if Seema continues this pattern is:

- A) Better stamina
- B) Stronger immunity
- C) Bone loss and hormonal issues
- D) Improved muscle gain

Answer: C. Bone loss and hormonal issues

Case Study 5 (UNSOLVED)

1. One psychological benefit of sports for girls is:

- A) Lower grades
- B) Increased anxiety
- C) Boosted self-confidence
- D) Reduced communication

2. Physical activity helps reduce lifestyle diseases by:

- A) Promoting poor eating
- B) Weakening immunity
- C) Regulating body weight and metabolism
- D) Reducing sleep quality

3. Importance of promoting sports among girls in schools is:

- A) To increase screen time
- B) To limit physical movement
- C) To build life skills and improve health
- D) To reduce outdoor play

4. One physical benefit Meena is likely to experience from this program is:

- A) Poor posture
- B) Improved fitness and strength
- C) Increased laziness
- D) Low energy

Case Study 6 (UNSOLVED)

Nisha is 16-year-old gymnast training six days a week. She has recently been trying to lose weight to improve her performance and appearance. She often skips meals and avoids carbohydrates. Over time, she begins to feel tired, loses focus in school, and stops getting her monthly periods. Her coach notices her weakness during practice and advises a medical consultation.

1. What condition is Nisha likely to develop due to her behaviour?

- A) Obesity
- B) Female Athlete Triad
- C) High blood pressure
- D) Diabetes

2. Which of the following is a symptom of low energy availability?

- A) Increased muscle strength
- B) Normal menstrual cycle
- C) Fatigue and missed periods
- D) Better focus in academics

3. What is an appropriate first step to help Nisha recover?

- A) Reduce her water intake
- B) Increase training sessions
- C) Restore proper eating habits and seek medical help
- D) Encourage further weight loss

5 MARKS QUESTIONS - LONG ANSWER TYPE QUESTIONS

1. Explain the Female Athlete Triad in detail. Discuss its components, causes, and preventive measures.

The Female Athlete Triad is a serious health concern affecting physically active girls and women. It involves three interrelated conditions:

Low Energy Availability:

This occurs when energy intake through food is insufficient to meet the energy demands of

both training and normal bodily functions. It may result from disordered eating or unintentional undereating due to intense training schedules.

Menstrual Dysfunction:

Low energy availability disrupts hormonal function, especially estrogenic production, leading to menstrual irregularities like amenorrhea (absence of periods). This is a sign of hormonal imbalance and a marker of reproductive health concerns.

Low Bone Mineral Density (BMD):

Reduced estrogenic levels also impair calcium absorption and bone formation, resulting in weak bones and higher risk of fractures and osteoporosis, even at a young age.

Causes:

- Excessive training without proper nutrition
- Pressure to stay thin or maintain a specific weight
- Lack of awareness about nutrition and menstrual health
- Emotional stress and competitive anxiety

Preventive Measures:

- Ensuring a balanced diet with adequate caloric intake
- Monitoring menstrual health and body weight regularly
- Reducing training load when necessary
- Providing psychological and nutritional counselling
- Educating athletes, coaches, and families about the risks and signs of the triad

2. Describe various types of postural deformities in children. What are their causes and corrective measures?

Postural deformities are structural misalignments in the body's posture that can lead to discomfort, reduced performance, and long-term health issues. Common types include:

Kyphosis:

An excessive outward curve of the upper spine, resulting in a hunchback appearance.

Cause: Poor posture, weak back muscles, spinal abnormalities.

Correction: Back-strengthening exercises and bracing if needed.

Lordosis:

An exaggerated inward curve of the lower back.

Cause: Weak abdominal muscles, obesity, or poor posture.

Correction: Core strengthening, stretching the hip flexors.

Scoliosis:

A lateral (sideways) curvature of the spine, often developing during adolescence.

Cause: Idiopathic (unknown) or congenital.

Correction: Bracing, physiotherapy, or surgery in severe cases.

Knock Knees (Genu Valgus):

Knees touch but ankles remain apart while standing.

Cause: Vitamin D deficiency, obesity, poor posture.

Correction: Strengthening leg muscles, corrective footwear, and physiotherapy.

Flat Foot:

The foot's arch collapses, and the sole touches the ground entirely.

Cause: Weak foot muscles, heredity.

Correction: Arch support, barefoot walking on sand, foot exercises.

General Causes:

- Lack of physical activity
- Poor sitting or standing habits
- Nutritional deficiencies
- Carrying heavy school bags improperly

Corrective Measures:

- Early detection and physiotherapy
- Postural training
- Supervised exercise programs
- Adequate nutrition and ergonomic furniture

3. Discuss the importance of physical activity and sports in the overall development of children and adolescents.

Physical activity and sports play a vital role in the **holistic development** of children and adolescents, influencing their physical, mental, social, and emotional well-being.

Physical Benefits:

- Improves cardiovascular fitness, muscular strength, and endurance
- Enhances flexibility and motor coordination
- Prevents childhood obesity and related disorders
- Promotes better sleep and energy levels

Mental and Emotional Benefits:

- Reduces stress, anxiety, and symptoms of depression
- Boosts self-confidence, self-discipline, and emotional resilience
- Encourages goal-setting, focus, and motivation

Social Development:

- Develops teamwork, cooperation, and leadership skills
- Builds friendships and teaches respect for others
- Provides opportunities for inclusion and communication

Academic Performance:

Studies have shown a positive link between physical activity and academic success. Active children tend to have better concentration, memory, and classroom behaviour.

Lifestyle and Habit Formation:

- Encourages the adoption of healthy habits early in life
- Reduces screen time and sedentary behaviour
- Promotes lifelong fitness awareness and responsibility

UNSOLVED LONG ANSWER TYPE QUESTIONS (5 MARKS EACH)

- 1. Describe in detail the role of nutrition, training, and rest in preventing menstrual dysfunction among female athletes.**
- 2. What are the benefits of women's participation in sports?"**